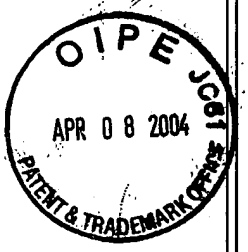
Image AF/1764



U.S. PTO Customer No. 25280 Case No. 2130

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of: GREEN et al.

Serial Number: 09/586,381

Filed: 02-Jun-2000

For: **YARNS AND FABRICS HAVING A WASH-DURABLE NON-ELECTRICALLY CONDUCTIVE TOPICALLY APPLIED METAL-BASED FINISH**

Group Art Unit: 1764

Examiner: WACHTEL, ALEXIS A.

Mail Stop Appeal Brief
Commissioner for Patents
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Signature: Alissa D. Kohlman
Name: Alissa D. Kohlman

TRANSMITTAL OF APPEAL BRIEF AND AUTHORIZATION TO CHARGE DEPOSIT ACCOUNT

Sir:

Applicant hereby transmits its Appeal Brief, in triplicate. Please charge the fee pursuant to 37 C.F.R. 1.17(c) of $330.00 to Deposit Account No. 04-0500 as well as any additional fee required. A duplicate copy of this Authorization is provided.

Respectfully requested,

April 6, 2004

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OIPE JC61 APR 0 8 2004 PATENT & TRADEMARK OFFICE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Green et al.
Serial Number:	09/586,381
Filed:	June 2, 2000
For:	Yarns and Fabrics Having A Wash-Durable Non-Electrically Conductive Topically Applied Metal- Based Finish
Group Art Unit:	1764
Examiner:	Alexis A. Wachtel

BRIEF ON APPEAL UNDER 37 CFR 1.192

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

Certificate of Mailing Under 37 CFR § 1.8

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Signature: Alissa D. Kohlman
Name: Alissa D. Kohlman

Sir:

The following Appeal Brief is submitted pursuant to the Notice of Appeal filed on or about February 6, 2004 from the Final Office Action dated November 6, 2003.

I. REAL PARTY IN INTEREST

The above-referenced application is the subject of an assignment to Milliken & Company, located at 920 Milliken Road, Spartanburg, South Carolina, which is the real party in interest.

II. RELATED APPEALS & INTERFERENCES

Patent Application Serial No. 09/585,762 (also assigned to Milliken & Company) filed on June 2, 2000 is also under appeal.

III. STATUS OF CLAIMS

Claims 29-48 have been rejected and are the subject of this Appeal.

IV. STATUS OF AMENDMENTS

No Amendments were filed after the Final Office Action.

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V. SUMMARY OF THE INVENTION

The subject application is related to improvements in durable non-conductive metal-based treatments (such as coatings or finishes) for yarns and textile fabrics.

Claim 29 is directed to a substrate treated with a finish comprised of (1) compounds selected from the group consisting of metal particle-containing compounds, metal-ion containing compounds, metal-ion generating compounds, and any combinations thereof and (2) at least one binder material. The binder material is not readily water soluble after application to the substrate and can withstand attack by standard laundering additives (such as detergents, solvents, bleaches, or mixtures thereof) and can withstand exposure to high temperatures associated with standard drying temperatures. The substrate may be a yarn, a fabric comprised of individual fibers, or a film. The finish is adhered to at least one portion of the surface of the substrate, and the at least one portion retains at least about 50% of the adhered finish after 10 washes (as tested according to AATCC Test Method 130-1981). The treated substrate is electrically non-conductive. If the selected metal is zinc, then at least one hydrophilic binder compound and at least one hydrophobic binder compound are present to adhere the zinc compound to the substrate. The finish exhibits antimicrobial properties.

The features of Claim 29 are described, for example, in the specification on page 5 (lines 5-21) to page 6 (lines 1-11), page 13 (lines 15-19), and page 19 (lines 1-4). See also the test results presented in Tables 1-17.

Claim 30 depends from Claim 29 and is directed to a treated substrate wherein the substrate is an individual yarn. The features of Claim 30 are described, for example, in the specification on page 5 (lines 5-9), page 11, and page 12 (lines 1-7).

Claim 31 depends from Claim 29 and is directed to a treated substrate wherein the substrate is a textile fabric. The features of Claim 31 are described, for example, in the specification on page 5 (lines 5-9), page 11, and page 12 (lines 1-7).

Claim 32 depends from Claim 29 and is directed to a treated substrate wherein the substrate is a film. The features of Claim 32 are described, for example, in the specification on page 5 (lines 5-9), page 11, and page 12 (lines 1-7).

Claim 33 depends from Claim 29 and is directed to a treated substrate wherein the finish comprises metal particles. The features of Claim 33 are described, for example, in the specification on page 5 (lines 5-8) and on page 8 (lines 16-21) through page 9.

Claim 34 depends from Claim 29 and is directed to a treated substrate wherein the finish comprises metal-ion generating compounds. The features of Claim 34 are described, for example, in the specification on page 5 (lines 5-8) and on page 8 (lines 16-21) through page 9 (lines 1-13).

Claim 35 depends from Claim 33 and is directed to a treated substrate wherein the finish comprises a metal selected from one of the transition metals. The features of Claim 35 are described, for example, in the specification on page 8 (lines 16-21) through page 9 (lines 1-6).

Claim 36 depends from Claim 35 and is directed to a treated substrate wherein the transition metal is selected from the group consisting of silver and zinc. The features of Claim 36 are described, for example, in the specification on page 8 (lines 16-21) through page 9 (lines 1-6).

Claim 37 depends from Claim 34 and is directed to a treated substrate wherein the finish comprises a metal selected from one of the transition metals. The features of Claim 37 are described, for example, in the specification on page 8 (lines 16-21) through page 9 (lines 1-6).

Claim 38 depends from Claim 37 and is directed to a treated substrate wherein the transition metal is selected from the group consisting of silver and zinc. The features of Claim 38 are described, for example, in the specification on page 8 (lines 16-21) through page 9 (lines 1-6).

Claim 39 is directed to a substrate treated with a non-electrically conductive treatment comprised of (1) metal-containing compounds selected from the group consisting of metal

particle-containing compounds, metal-ion containing compounds, and any combinations thereof and (2) at least one binder material. The binder material is not readily water soluble after application to the substrate and can withstand attack by standard laundering additives (such as detergents, solvents, bleaches, or mixtures thereof) and can withstand exposure to high temperatures associated with standard drying temperatures. The substrate may be a yarn, a fabric comprised of individual fibers, or a film. The non-electrically conductive treatment is adhered to at least one portion of the surface of the substrate.

The at least one portion of the surface of the treated substrate exhibits a log kill rate for *Staphylococcus aureus* and *Klebsiella pneumoniae* of at least 1.5 (as tested according to AATCC Test Method 100-1993 for 24 hour exposure) and retains at least about 50% of the adhered finish after 10 washes (as tested according to AATCC Test Method 130-1981). If the selected metal is zinc, then at least one hydrophilic binder compound and at least one hydrophobic binder compound are present to adhere the zinc compound to the substrate.

The features of Claim 39 are described, for example, in the specification on page 5 (lines 5-21) to page 6 (lines 1-11), page 13 (lines 15-19), and page 19 (lines 1-4). See also the test results presented in Tables 1-17.

Claim 40 depends from Claim 39 and is directed to a treated substrate wherein the substrate is an individual yarn. The features of Claim 40 are described, for example, in the specification on page 5 (lines 5-9), page 11, and page 12 (lines 1-7).

Claim 41 depends from Claim 39 and is directed to a treated substrate wherein the substrate is a textile fabric. The features of Claim 41 are described, for example, in the specification on page 5 (lines 5-9), page 11, and page 12 (lines 1-7).

Claim 42 depends from Claim 39 and is directed to a treated substrate wherein the substrate is a film. The features of Claim 42 are described, for example, in the specification on page 5 (lines 5-9), page 11, and page 12 (lines 1-7).

Claim 43 depends from Claim 39 and is directed to a treated substrate wherein the finish comprises metal particles. The features of Claim 43 are described, for example, in the specification on page 5 (lines 5-8) and on page 8 (lines 16-21) through page 9.

Claim 44 depends from Claim 39 and is directed to a treated substrate wherein the finish comprises metal-ion generating compounds. The features of Claim 44 are described, for example, in the specification on page 5 (lines 5-8) and on page 8 (lines 16-21) through page 9 (lines 1-13).

Claim 45 depends from Claim 43 and is directed to a treated substrate wherein the finish comprises a metal selected from one of the transition metals. The features of Claim 45 are described, for example, in the specification on page 8 (lines 16-21) through page 9 (lines 1-6).

Claim 46 depends from Claim 45 and is directed to a treated substrate wherein the transition metal is selected from the group consisting of silver and zinc. The features of Claim 46 are described, for example, in the specification on page 8 (lines 16-21) through page 9 (lines 1-6).

Claim 47 depends from Claim 44 and is directed to a treated substrate wherein the finish comprises a metal selected from one of the transition metals. The features of Claim 47 are described, for example, in the specification on page 8 (lines 16-21) through page 9 (lines 1-6).

Claim 48 depends from Claim 47 and is directed to a treated substrate wherein the transition metal is selected from the group consisting of silver and zinc. The features of Claim 48 are described, for example, in the specification on page 8 (lines 16-21) through page 9 (lines 1-6).

VI. ISSUES

At issue in the present Appeal is:

Whether Claims 29-48 are properly rejected under 35 USC 103(a) as being unpatentable over Sawan et al. (US Patent No. 5,849,311) in view of Young, Sr. et al. (US Patent No. 5,432,000).

VII. GROUPING OF CLAIMS

Appellants respectfully submit that all of the claims stand together.

VIII. ARGUMENT

The Office has rejected Claims 29-48 as being unpatentable under 35 USC 103(a) over Sawan et al. (US Patent No. 5,849,311) in view of Young, Sr. et al. (US Patent No. 5,432,000).

Sawan et al. is directed to contact-killing non-leaching antimicrobial materials (Abstract), while Young, Sr. et al. is directed to fiber products comprised of dry discontinuous fibers having starch binder on at least a portion of the fiber surfaces (Abstract).

More specifically, Sawan et al. disclose an antimicrobial material comprised of a combination of an organic material which forms a matrix and a biocide which interacts strongly enough with the matrix that it does not leach from the matrix. The organic material must be capable of reversibly binding or complexing with the biocide and must further be capable of insinuating the biocide into the cell membrane of the microorganism. (Col. 2, lines 43-51). The preferred organic material is crosslinked to form the matrix. One preferred organic material is polyhexamethylene biguanide polymer crosslinked with an epoxide to form a crosslinked matrix (col. 3, lines 27-41). Metallic materials which are bactericidal or bacteriostatic are preferred, such as silver compounds like silver halide or silver iodide (col. 3, lines 42-65).

Young, Sr. et al. teach binder materials for treating discontinuous fibers. The binder materials are preferably of the type that are capable of subsequently binding the fibers to one another or to other fibers during the manufacture of webs (col. 9, lines 6-12). Suitable binders include polymeric materials which are thermoplastic or thermosetting and may be provided in liquid form as latexes (col. 9, lines 36-45). In selecting a suitable binder, Young, Sr. et al. disclose that the proper functionality of the binder should be considered such that for particulate materials (like super absorbent polymers), the binder surface structure is capable of hydrogen bonding to like surface structures on the surface of the particulate. The binder should also have good intermolecular contact between the binder and particles, and it should be persistent. (Col. 11, lines 3-32).

It is specifically acknowledged by the Office that Sawan et al. fail to teach the use of a binder having the claimed properties (see Office Action dated August 18, 2003). Thus, the Office combines the teachings of Sawan et al. with Young, Sr. et al. to reject Claims 29-48.

The Office's argument with regard to Appellants' Claims 29-48 is as follows (see Office Action dated August 18, 2003):

> Sawan et al. disclose a contact-killing coating on a substrate (Col 4, lines 21-26) wherein the biocidal material used is of a metallic material, wherein the metallic material can be a metal, metal oxide, metal salt, metal complex, metal alloy or mixture (Col 3, lines 47-52). Metals that can be used include silver, zinc, cadmium, lead, mercury, antimony, gold, aluminum, copper, platinum and palladium, their salts, oxides, complexes, and alloys. (Col 3, lines 47-60). Said metallic material is in particulate form that is dispersed in an emulsion (Col 4, lines 1-5). The emulsion or suspension includes a crosslinking agent (Col 4, lines 5-17) which together with the emulsion broadly constitutes a binder. Said contact-killing coating can be used on wound dressing, personal hygiene products, household products, food preparation surfaces and packaging, water storage, treatment and delivery systems, biosensitive systems, lab equipment (Col 12, lines 32-40) as well as surgical gloves (Col 1, line 67). Conventionally, wound dressings are woven or nonwoven, food packaging materials and surgical gloves are films and personal hygiene products such as diapers have nonwoven materials as well as film layers that could be coated with said contact-killing coating. Inherently, if contact-killing coating is applied to a woven or nonwoven, at least some yarns or fibers will be coated completely.
>
> Young teaches that binders having good intermolecular contact between the binder and particles are especially desirable. (Col 11, lines 19-21). Young discloses that such desirable binders used in emulsion form include polyesters, polyimides, melamine/formaldehyde, epoxy and other binder materials (Col 9, lines 35-67, Col 10, lines 1-19).

> In view of this teaching, it would have been obvious to one of ordinary skill to have used any of the binders disclosed by Young instead of the binder disclosed by Sawan et al. since the binders disclosed by Young are equivalently useful and are more available or cost effective.
>
> Although Sawan et al. and Young fail to explicitly teach the claimed percentage of biocidal coating integrally retained on substrate after the claimed number of washes, claimed log kill rate, or that the binder material used is susceptible to attack by a standard laundering additive selected from the group constituting of detergents, solvents, bleaches or mixtures thereof and is not susceptible to degradation due to exposure to high temperatures associated with standard laundry drying temperatures, it is reasonable to presume that said limitations are inherent to the invention. Support for said presumption is found in the use of similar materials (i.e. metallic biocidal suspension or binder applied to a substrate) used to produce the biocidal coated substrate. The burden is upon the Applicant to prove otherwise.

Appellants respectfully believe that the rejection of Claims 29-48 under 35 § 103(a) as being unpatentable over Sawan et al. (US Patent No. 5,849,311) in view of Young, Sr. et al. (5,432,000) is in error and should be withdrawn on the grounds that the rejection is based on a primary reference which Appellants have overcome with the submission of a proper Rule 1.132 declaration.

Appellants supplied proper declaratory evidence (submitted May 20, 2002) to illustrate that the best overall embodiment taught by Sawan et al. (in terms of an organic matrix for the durable topical application of biocides to substrates) did not function to the same extent as required within Appellants pending claims. As a result, the Office agreed by removing the Sawan et al. reference as prior art (see page 2 of Final Office Action dated November 6, 2003).

The Office further states (see Final Office Action dated November 6, 2003):

> Applicant's declaratory evidence (Rule 132 Declaration of David Green) overcame the art rejections based solely on Sawan et al.'s disclosure. Examiner

> agrees that Applicant's declaration demonstrated that Applicant's claimed properties are not inherent to the article of Sawan et al.'s disclosure. Sawan et al. was rendered inapplicable as prior art on its own due to the previously provided declaration.
>
> A secondary reference, i.e., Young, Sr. et al was provided to remedy the deficiencies of Sawan et al.'s disclosure. The art combination of Sawan et al. and Young Sr. et al. clearly results with Applicant's claimed article since the binder disclosed by Young, Sr. is chemically identical to the binder discussed by the Applicant in the Specification and provides clear motivation for its use with Sawan et al.'s article. As a result, the Declaration filed by the Applicant fails to address the shortcomings of Young, Sr. et al.'s teachings by way of a showing of unexpected results.

Appellants properly supplied the aforementioned declaratory evidence (Rule 132 Declaration of David Green) analyzing the preferred embodiment (biguanide matrix) with unreasonably higher amounts of silver iodide than were exemplified by Sawan et al. for silver retention durability after laundering (as required by the pending claims). The results showed that silver retention on the surface could not meet the same required durability levels present within the claims of Appellants' application, no matter how much silver iodide was initially present. That was all Appellants were required to do in meeting their burden of showing the inapplicability of Sawan et al. over their claims. There is simply no basis for Appellants to now compare the resultant materials of the combined teachings of the cited primary and secondary references. It is evident that, particularly in view of the above-noted Green Declaration, Appellants discovered unexpectedly improved silver retention after repeated launderings as compared with Sawan et al.'s materials. Thus, the only way it can now be found that replacing Sawan et al.'s preferred biguanide "binder" (which, again, could not perform at the same level as is required by the present claims) with any other type of binder is a clear exercise of hindsight reconstruction of Appellants' own teachings. Regardless of Young, Sr. et al.'s teachings, the fact that Sawan et al. specifically taught that their best results for non-leaching and loss of biocide (silver iodide, in this instance) were provided by the already-tested biguanide "binder", it is clear that Appellants have overcome any basis of rejection involving this primary reference.

IX. CONCLUSION

For the reasons set forth above, Appellants respectfully urge that the obviousness rejection of Claims 29-48 is improper. Reversal of this obviousness rejection, as presented in this Appeal, is hereby requested.

A copy of pending Claims 29-48 is attached as an Appendix hereto.

The Commissioner is hereby authorized to charge the Appeal Brief fee of $330.00 to Deposit Account No. 04-0500. The Commissioner is also authorized to charge any additional fees that may be required, or credit any over-payment, to Deposit Account No. 04-0500. This Appeal Brief is being submitted in triplicate.

Respectfully submitted,

April 6, 2004

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APPENDIX

29. A treated substrate comprising

a finish comprising a) compounds selected from the group consisting of metal particle-containing compounds, metal ion-containing compounds, metal-ion generating compounds, and any combinations thereof, and b) at least one binder material, wherein said binder material, after processing and application to said substrate, is not readily water soluble, is not susceptible to attack by a standard laundering additive selected from the group consisting of detergents, solvents, bleaches, or mixtures thereof, and is not susceptible to degradation due to exposure to high temperatures associated with standard laundry drying temperatures;

a substrate selected from the group consisting of a yarn, a fabric comprised of individual fibers, and a film;

wherein said finish is adhered to at least one portion of the surface of said substrate;

wherein said at least one portion of said treated substrate retains at least about 50% of said adhered to finish after 10 washes as performed in accordance with the wash procedure of AATCC Test Method 130-1981;

wherein said treated substrate is electrically non-conductive;

wherein if said metal is zinc, then at least one hydrophilic binder compound at least one hydrophobic binder compound are present adhering said zinc compound to said substrate; and

wherein said finish exhibits antimicrobial properties.

30. The treated substrate of Claim 29 wherein said substrate is an individual yarn.

31. The treated substrate of Claim 29 wherein said substrate is a textile fabric.

32. The treated substrate of Claim 29 wherein said substrate is a film.

33. The treated substrate of Claim 29 wherein said finish comprises metal particles.

34. The treated substrate of Claim 29 wherein said finish comprises metal-ion generating compounds.

35. The treated substrate of Claim 33 wherein said finish comprises a metal selected from one of the transition metals.

36. The treated substrate of Claim 35 wherein said transition metal is selected from the group consisting of silver and zinc.

37. The treated substrate of Claim 34 wherein said finish comprises a metal selected from one of the transition metals.

38. The treated substrate of Claim 37 wherein said transition metal is selected from the group consisting of silver and zinc.

39. A treated substrate comprising

a non-electrically conductive treatment comprising a) metal-containing compounds selected from the group consisting of metal particle-containing compounds, metal ion-containing compounds, and any combinations thereof, and b) at least one binder material, wherein said binder material, after processing and application to said substrate, is not readily water soluble, is not susceptible to attack by a standard laundering additive selected from the group consisting of

detergents, solvents, bleaches, or mixtures thereof, and is not susceptible to degradation due to exposure to high temperatures associated with standard laundry drying temperatures; and

a substrate selected from the group consisting of a yarn, a fabric comprised of individual yarns, and a film;

wherein said non-electrically conductive treatment is adhered to at least a portion of the surface of said substrate; and

wherein said at least a portion of the surface of said treated substrate exhibits a) a log kill rate for *Staphylococcus aureus* of at least 1.5 and b) a log kill rate for *Klebsiella pneumoniae* of at least 1.5, both as tested in accordance with AATCC Test Method 100-1993 for 24 hour exposure, and c) retention of at least about 50% of said adhered to finish, all after at least 10 washes, said washes performed in accordance with the wash procedure as part of AATCC Test Method 130-1981; and

wherein if said metal is zinc, then at least one hydrophilic binder compound at least one hydrophobic binder compound are present adhering said zinc compound to said substrate.

40. The treated substrate of Claim 39 wherein said substrate is an individual yarn.

41. The treated substrate of Claim 39 wherein said substrate is a textile fabric.

42. The treated substrate of Claim 39 wherein said substrate is a film.

43. The treated substrate of Claim 39 wherein said finish comprises metal particles.

44. The treated substrate of Claim 39 wherein said finish comprises metal-ion generating compounds.

45. The treated substrate of Claim 43 wherein said finish comprises a metal selected from one of the transition metals.

46. The treated substrate of Claim 45 wherein said transition metal is selected from the group consisting of silver and zinc.

47. The treated substrate of Claim 44 wherein said finish comprises a metal selected from one of the transition metals.

48. The treated substrate of Claim 47 wherein said transition metal is selected from the group consisting of silver and zinc.